NASA Procedural Requirements

NPR 7120.7
Effective Date: November 03, 2008
Expiration Date: November 03, 2013

COMPLIANCE IS MANDATORY

Printable Format (PDF)

Request Notification of Change (NASA Only)

Subject: NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements

Responsible Office: Office of the Chief Engineer

Chapter 4. Information Technology (IT) Program and Project Requirements by Phase

4.1 IT Programs - Formulation Phase

4.1.1 Purpose: The purpose of program formulation activities is to establish a cost-effective program that meets Agency and Mission Directorate/Mission Support Office goals and objectives. The program FAD authorizes a program manager to initiate the planning of a new program and to perform the analyses required to formulate a program plan. Major reviews leading to approval at KDP-I are the PCDR, and the program Governing Body review (see Figure 2-1) .

4.1.2 Requirements: During program formulation, the program manager and the program team shall:

a. Support the Mission Directorate or Mission Support Office in developing and obtaining approval of the FAD, PCA, and the Planning, Programming, Budgeting, and Execution (PPBE) process.

b. Prepare and obtain approval of the program plan that follows the template in Appendix E.

c. Obtain approval of interagency and international agreements.

d. Plan, prepare for, and conduct a PCDR.

e. Develop all required KDP-I gate products as indicated in Table 6-1.

f. Plan, prepare for, and support the program Governing Body review prior to KDP-I.

4.2 IT Programs - Implementation Phase

4.2.1 Purpose: During implementation, the program manager works with the stakeholders and the constituent projects to execute the program plan in a cost-effective manner on schedule. PIRs and periodic independent assessments ensure that the program continues to contribute to Agency and Mission Directorate or Mission Support Office goals and objectives within funding constraints.

4.2.2 Requirements: During program implementation, the program manager and the program team shall:

a. Execute the program plan.

b. Conduct planning, program-level systems engineering, and integration, as appropriate to the program.

c. Support the Mission Directorate or Mission Support Office in initiating the projects selection process.

d. Support the MDAA or Mission Support Office Official-in-Charge in the selection of projects, either assigned or through a competitive process.

e. Approve project FADs and project plans.

f. Plan, prepare for, and conduct biennial PIRs.

g. Support Governing Body reviews prior to KDP-II, -III, -IV, etc.

h. Support the MDAA or Mission Support Office Official-in-Charge in updating the PCA.

i. Update the program plan.

j. Provide oversight of the projects within the program and report their status periodically.

k. Review project PPBE process inputs and prepare program PPBE process input.

l. Develop technologies and common solutions that cut across multiple projects within the program.

m. Develop all required gate products as indicated in Table 6-1 prior to KDP-II, -III, -IV, etc.

n. Plan, prepare for, and support the program Governing Body reviews prior to KDP-II, -III, -IV, etc.

4.3 IT Projects - Pre-Phase A

4.3.1 Purpose: During Pre-Phase A, a pre-project team studies a broad range of system-enabling concepts that contribute to program and Mission Directorate or Mission Support Office goals and objectives. These advanced studies along with interactions with customers and other potential stakeholders help identify a promising concept and tentative project-level requirements. The team conducts an enterprise architecture review with the NASA Chief Enterprise Architect or designee and assesses project alignment with gaps in the "As-Is" and "To-Be" architectures. These activities are focused toward a SCR and KDP-A. Pre-Phase A is optional; all other phases of the IT project life cycle are required.

4.3.2 Requirements: If a Pre-Phase A is conducted, then the pre-project manager and team shall:

a. Obtain an approved project FAD.

b. Support the program manager in the development of the preliminary program requirements on the project.

c. Consider naming an Information System Security Official to assist the team in identifying IT security issues with candidate system concepts. Naming an Information System Security Official at this phase of the project is optional, but recommended.

d. Develop a preliminary system concept.

e. Working with the Agency or Center Enterprise Chief Architect staff, conduct an assessment of how the system fits into NASA's EA.

f. Perform a preliminary IT security risk assessment of the system in accordance with NPR 2810.1, Security of Information Technology.

g. Prepare a preliminary assessment of the security categorization of the information to be hosted on the system, as required by NPR 2810.1.

h. Plan, prepare for, and conduct the SCR shown in Figure 2-4 in accordance with Appendix G of this document.

i. Baseline work agreements for Phase A.

j. Prepare all required KDP-A gate products identified in Table 6-2.

k. Plan, prepare for, and support the project Governing Body review prior to KDP-A.

4.4 IT Projects - Phase A

4.4.1 Purpose: During Phase A, a project team is formed to fully develop a system concept and begin development of needed technologies. This work, along with interactions with customers and other potential stakeholders, helps to finalize a system concept and the project-level requirements. These activities take place in preparation for SRR. The phase culminates in KDP-B.

4.4.2 Requirements: During Phase A, the project manager and project team shall:

a. Obtain an approved project FAD, if a pre-Phase A was not conducted.

b. During this and subsequent life-cycle phases, follow the requirements of NASA Interim Directive (NID)-9250, Identifying Capital Assets and Capturing Their Costs.

c. Support the program manager in the development of the baseline program requirements on the project.

d. Establish the project structure.

e. Name an Information System Security Official responsible for ensuring that the information system complies with Federal and NASA IT security requirements.

f. Initiate the development of Memorandums of Understanding (MOUs)/Memorandums of Agreement (MOAs) with domestic external partners, as needed.

g. Work with the program manager and HQ Office of External Relations to initiate international agreements, as needed.

h. Complete an AoA and select a preferred, baseline system concept.

i. Develop preliminary system-level (and lower-level, as needed) requirements.

j. Develop a preliminary system operations concept.

k. Working with the Agency or Center Enterprise Chief Architect staff, determine how the system interfaces with, replaces, and/or supports other systems documented in the NASA EA.

l. Prepare the preliminary software development/management plan required by NPR 7150.2.

m. Plan, prepare for, and conduct the SRR shown in Figure 2-4 in accordance with Appendix G of this document.

n. Plan, prepare for, and conduct the EAPR described in NPR 2830.1.

o. Conduct the Information/System Security Categorization required by NPR 2810.1.

p. Further assess the information to be hosted on the system, including:

(1) Determining if the system data includes personally identifiable information and thus requires privacy protection in conformance with statutes governing privacy information and enabling Agency policy.

(2) Developing or selecting the records retention for all information related to the project and to be hosted on the system in accordance with the requirements of NPR 1441.1.

q. Determine the IT security controls that apply to the system in accordance with NPR 2810.1.

r. Prepare a preliminary project plan that follows the template in Appendix F.

s. For contracts requiring Earned Value Management (EVM) (see Appendix F, paragraph 3.1.e), conduct required Integrated Baseline Reviews (IBRs).

t. Develop and document a preliminary integrated baseline for all work to be performed by the project that includes the following:

(1) A preliminary high-level WBS and associated WBS dictionary, preliminary integrated master schedule, preliminary life-cycle cost estimate, workforce estimates, and the project's technical baseline, all consistent with the program requirements levied on the project.

(2) The preliminary life-cycle cost estimate uses the latest available full-cost accounting guidance and practices, and including IT security costs.

(3) The preliminary life-cycle cost estimate includes reserves, along with the level of confidence estimate provided by the reserves based on a cost-risk analysis.

(4) The preliminary cost estimate is to be time-phased by Government Fiscal Year (GFY) to WBS Level 2:

(i) For internal use software projects, develop the Level 2 WBS to meet the requirements of NASA's Financial Management Requirements (FMR) Volume 6, Chapter 4, 041206, Accounting, Property Plant and Equipment, Software Policies and Procedures - Capitalization.

u. Incorporate life-cycle risk management principles in the project plan in accordance with NPR 8000.4, Risk Management Procedural Requirements.

v. Working with the appropriate support organizations, develop an initial IT infrastructure assessment of project needs and Agency-wide and external capabilities to meet infrastructure needs.

w. Baseline work agreements for Phase B.

x. Develop all required KDP-B gate products as indicated in Table 6-2.

y. Plan, prepare for, and support the project Governing Body review prior to KDP-B.

4.5 IT Projects - Phase B

4.5.1 Purpose: During Phase B, the project team completes its preliminary design and technology development. These activities are focused toward completing the project plan and PDR. In addition, the NAR is supported prior to briefing the project Governing Body. The phase culminates in KDP-C.

4.5.2 Requirements: During Phase B, the project manager and the project team shall:

a. Support the program manager in the update of the baseline program requirements on the project.

b. Finalize external agreements, such as interagency and international agreements, procurements, MOUs, and facility resources.

c. Implement the preliminary project plan.

d. Develop the top-level system preliminary technical architecture, identifying the "as-is" and "to-be" architectures as they relate to the NASA EA.

e. Baseline the system-level requirements and develop the subsystem and lower-level technical requirements leading to the PDR baseline.

f. Develop a set of system and associated subsystem preliminary designs, including interface definitions, and document this work in a preliminary design document.

g. Develop the baseline operations concept.

h. Complete make-or-buy decisions and initiate long-lead procurements.

i. Conduct risk analyses and use the results to make IT risk informed design decisions in accordance with NPR 8000.4, and document the decisions in the risk management control part of the project plan.

j. Develop a list of descope options, if applicable.

k. Update the preliminary software development/management plan required by NPR 7150.2.

l. Plan, prepare for, and conduct the PDR shown in Figure 2-4 in accordance with Appendix G of this document.

m. Complete and obtain approval of the baseline project plan that follows the template in Appendix F.

n. Develop, document, and maintain a project baseline integrated baseline for all work performed by the project:

(1) The project's integrated baseline includes the project WBS and has an associated WBS dictionary.

(2) The project's integrated baseline includes the integrated master schedule, baseline life-cycle cost estimate, workforce estimates, and the PDR technical baseline, all consistent with the program requirements levied on the project.

(3) The baseline life-cycle cost estimate uses the latest available full-cost accounting guidance and practices, and includes IT security costs.

(4) The baseline life-cycle cost estimate includes reserves, along with the level of confidence estimate provided by the reserves based on a cost-risk analysis.

(5) The baseline life-cycle cost estimate is to be time-phased by GFY to WBS Level 2:

(i) For internal use software projects, develop the Level 2 WBS to meet the requirements of NASA's FMR Volume 6, Chapter 4, 041206, Accounting, Property Plant and Equipment, Software Policies and Procedures - Capitalization.

o. For contracts requiring EVM, conduct required IBRs.

p. Conduct the IT security risk assessment for the system required by NPR 2810.1.

q. Determine whether the project is subject to an IVR based on criteria issued by the NASA OCIO and posted on the OCIO Web site. For those projects subject to an IVR, prepare for and support the IVR as part of the NAR.

r. Plan, prepare for, and support the NAR independent review team.

s. Baseline work agreements for Phase C.

t. Develop the gate products required for KDP-C as indicated in Table 6-2.

u. Plan, prepare for, and support the project Governing Body review prior to KDP-C.

4.6 IT Projects - Phase C

4.6.1 Purpose: During Phase C, the project completes the design that meets the detailed requirements, begins early production of system components requiring long-lead time, and makes acquisitions that may be required.

4.6.2 Requirements: During Phase C, the project manager and the project team shall:

a. Implement the baseline project plan.

b. Develop the baseline system technical architecture, identifying the "as-is" and "to-be" architectures as they relate to the NASA EA.

c. Develop baseline software architecture and detailed designs, including the design of IT security controls required by NPR 2810.1.

d. Develop/procure long lead-time software and hardware.

e. Develop requisite system and subsystem test beds needed for qualification and acceptance testing of the system(s).

f. Initiate the qualification and acceptance testing of systems and/or subsystems.

g. Initiate all operational support and other enabling developments (e.g., facilities, equipment, updated databases), including a preliminary operations handbook to support the operations team.

h. Plan, prepare for, and conduct the CDR shown in Figure 2-4 in accordance with Appendix G of this document.

i. Implement EVM as documented in the project plan.

j. For contracts requiring EVM, conduct required IBRs.

k. Develop the preliminary training plan and training materials.

l. If the latest development cost Estimate at Completion (EAC) of the project or a schedule milestone listed on the project life-cycle chart in Figure 2-4 varies from the integrated baseline more than agreed upon thresholds, provide immediate written notice and a recovery plan to the program manager. These thresholds are documented in Section 3.1 of the project plan.

m. Use continuous risk management principles to manage IT risks in accordance with NPR 8000.4.

n. Update the project plan that follows the template in Appendix F.

o. Baseline work agreements for Phase D.

p. Develop the gate products required for KDP-D as indicated in Table 6-2.

q. Plan, prepare for, and support the project Governing Body review prior to KDP-D.

4.7 IT Projects - Phase D

4.7.1 Purpose: During Phase D, the project performs system coding, assembly, integration, and test.

4.7.2 Requirements: During Phase D, the project manager and the project team shall:

a. Implement the project plan.

b. Prepare baseline test plans, test procedures, and test cases.

c. Initiate coding, system assembly, integration, and test.

d. Resolve all test, analysis, and inspection discrepancies.

e. Document and implement all technical, management, and operational security controls as required by NPR 2810.1.

f. Prepare "as-built" and "as-deployed" hardware and software documentation.

g. Update the project plan that follows the template in Appendix F, including finalizing the IT security plan.

h. Complete all operational support and other enabling developments (e.g., facilities, equipment, updated databases), including a baseline operations handbook and a plan to transition system operations to the operations team.

i. Develop the baseline training plan and training materials.

j. Conduct operational tests and training, including normal and anomalous scenarios.

k. Submit any changes to the system description for inclusion in the NASA EA.

l. Meet the IT security certification and accreditation requirements specified in NPR 2810.1.

m. Plan, prepare for, and conduct the TRR and ORR shown in Figure 2-4 in accordance with Appendix G of this document.

n. Establish and maintain an integrated logistics support capability, including spares and system maintenance and operating procedures.

o. Implement EVM as documented in the project plan.

p. For contracts requiring EVM, conduct required IBRs.

q. If the latest development cost EAC of the project or a schedule milestone listed on the project life-cycle chart in Figure 2-4 varies from the integrated baseline more than agreed upon thresholds, provide immediate written notice and a recovery plan to the program manager. These thresholds are documented in Section 3.1 of the project plan.

r. Use continuous risk management principles to manage IT risks in accordance with NPR 8000.4.

s. Baseline work agreements for the Phase E.

t. Develop the gate products required for KDP-E as indicated in Table 6-2.

u. Plan, prepare for, and support the project Governing Body review prior to KDP-E.

4.8 IT Projects - Phase E

4.8.1 Purpose: During Phase E, the project deploys and operates the system developed in previous phases. During this phase, the project team that developed the system typically turns over responsibility for operation of the system to an operations team.

4.8.2 Requirements: During Phase E, the project manager, the project team, and/or the operations team shall:

a. Implement the project plan.

b. Deploy and operate the system.

c. Monitor system incidents, problems, and anomalies, as well as system capacity, to ensure that deployed project systems function as intended, investigate system behavior that is observed to exceed established operational boundaries or expected trends, and implement corrective actions as necessary.

d. Continuously monitor the system to ensure IT security controls are working properly and to detect and deter attempts to breach controls.

e. Update the training plan and training materials.

f. Provide sustaining engineering as necessary to enhance efficiency, reduce costs, repair software problems, increase capacity, and take advantage of the benefits of new technology.

g. Document lessons learned.

h. Conduct an annual IT security assessment of the system in conformance to the requirements of NPR 2810.1.

i. Re-certify the system every three years following the NIST standards for IT security certification as required by NPR 2810.1.

j. Update the "As-Is" and the "To-Be" information for this system in the NASA EA annually, as necessary.

k. Track the risks and mitigations identified in pre-Phase A and as updated in later phases.

l. Plan, prepare for, and support the EASR as shown in Figure 2-4 in accordance with the requirements of NPR 2830.1.

m. Prepare and document the system decommissioning/disposal requirements and plans in accordance with NPR 4300.1, NASA Personal Property Disposal Procedural Requirements, and the official records associated with the project in accordance with NPR 1441.1.

n. Use continuous risk management principles to manage IT risks in accordance with NPR 8000.4.

o. Baseline work agreements for Phase F.

p. Plan, prepare for, and conduct the PCR, including the project completion report, as shown in Figure 2-4 in accordance with Appendix G of this document.

q. Develop the gate products required for KDP-F as indicated in Table 6-2.

r. Plan, prepare for, and support the project Governing Body review prior to KDP-F.

4.9 IT Projects - Phase F

4.9.1 Purpose: During Phase F, the project implements the system decommissioning/disposal plan.

4.9.2 Requirements: During Phase F, the project manager and the project team shall:

a. Plan, prepare for, and conduct the DR shown in Figure 2-4 in accordance with Appendix G of this document.

b. Safely and in accordance with applicable laws and regulations, dispose of project system assets.

c. Disposition all records and information only in accordance with the applicable records retention schedule items from NPR 1441.1.

| TOC | Preface | Chapter1 | Chapter2 | Chapter3 | Chapter4 | Chapter5 | Chapter6 | AppendixA | AppendixB | AppendixC | AppendixD | AppendixE | AppendixF | AppendixG | ALL |

| NODIS Library | Program Formulation(7000s) | Search |

DISTRIBUTION:
NODIS